Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I05-032 H3180

DATE RECEIVED: 05/24/05 LVL LOT # :0505L561

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B1CR66							
BROMIDE BY IC	001	W	05LIC036	05/23/05	05/24/05	05/24/05	
BROMIDE BY IC	001 REP	W	05LIC036	05/23/05	05/24/05	05/24/05	
BROMIDE BY IC	001 MS	W	05LIC036	05/23/05	05/24/05	05/24/05	
CHLORIDE BY IC	001	W	05LICA36	05/23/05	05/24/05	05/24/05	
CHLORIDE BY IC	001 REP	W	05LICA36	05/23/05	05/24/05	05/24/05	
CHLORIDE BY IC	001 MS	W	05LICA36	05/23/05	05/24/05	05/24/05	
FLUORIDE BY IC	001	W	05LIC036	05/23/05	05/24/05	05/24/05	
FLUORIDE BY IC	001 REP	W	05LIC036	05/23/05	05/24/05	05/24/05	
FLUORIDE BY IC	001 MS	W	05LIC036	05/23/05	05/24/05	05/24/05	
NITRITE BY IC	001	W	05LIC036	05/23/05	05/24/05	05/24/05	1901
NITRITE BY IC	001 REP	W	05LIC036	05/23/05	05/24/05	05/24/05	1951
NITRITE BY IC	001 MS	W	05LIC036	05/23/05	05/24/05	05/24/05	2040
NITRATE BY IC	001	W	05LIC036	05/23/05	05/24/05	05/24/05	1918
NITRATE BY IC	001 REP	W	05LIC036	05/23/05	05/24/05	05/24/05	2007
NITRATE BY IC	001 MS	W	05LIC036	05/23/05	05/24/05	05/24/05	2056
PHOSPHATE BY IC	001	W	05LIC036	05/23/05	05/24/05	05/24/05	1901
PHOSPHATE BY IC	001 REP	W	05LIC036	05/23/05	05/24/05	05/24/05	1951
PHOSPHATE BY IC	001 MS	W	05LIC036	05/23/05	05/24/05	05/24/05	2040
SULFATE BY IC	001	W	05LICA36	05/23/05	05/24/05	05/24/05	
SULFATE BY IC	001 REP	W	05LICA36	05/23/05	05/24/05	05/24/05	
SULFATE BY IC	001 MS	W	05LICA36	05/23/05	05/24/05	05/24/05	
B1CR77							
BROMIDE BY IC	002	W	05LIC036	05/23/05	05/24/05	05/24/05	
CHLORIDE BY IC	002	W	05LICA36	05/23/05	05/24/05	05/24/05	
FLUORIDE BY IC	002	W	05LIC036	05/23/05	05/24/05	05/24/05	
NITRITE BY IC	002	W	05LIC036	05/23/05	05/24/05	05/24/05	2202
NITRATE BY IC	002	W	05LIC036	05/23/05	05/24/05	05/24/05	2218
PHOSPHATE BY IC	002	W	05LIC036	05/23/05	05/24/05	05/24/05	2202
SULFATE BY IC	002	W	05LICA36	05/23/05	05/24/05	05/24/05	
LAB QC:							
BROMIDE BY IC	MB1	W	05LIC036	N/A	05/24/05	05/24/05	

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I05-032 H3180

DATE RECEIVED: 05/24/05 LVL LOT # :0505L561

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BROMIDE BY IC	MB1 BS	W	05LIC036	N/A	05/24/05	05/24/05
CHLORIDE BY IC	MB1	W	05LICA36	N/A	05/24/05	05/24/05
CHLORIDE BY IC	MB1 BS	W	05LICA36	N/A	05/24/05	05/24/05
FLUORIDE BY IC	MB1	W	05LIC036	N/A	05/24/05	05/24/05
FLUORIDE BY IC	MB1 BS	W	05LIC036	N/A	05/24/05	05/24/05
NITRITE BY IC	MB1	W	05LIC036	N/A	05/24/05	05/24/05
NITRITE BY IC	MB1 BS	W	05LIC036	N/A	05/24/05	05/24/05
NITRATE BY IC	MB1	W	05LIC036	N/A	05/24/05	05/24/05
NITRATE BY IC	MB1 BS	W	05LIC036	N/A	05/24/05	05/24/05
PHOSPHATE BY IC	MB1	W	05LIC036	N/A	05/24/05	05/24/05
PHOSPHATE BY IC	MB1 BS	W	05LIC036	N/A	05/24/05	05/24/05
SULFATE BY IC	MB1	W	05LICA36	N/A	05/24/05	05/24/05
SULFATE BY IC	MB1 BS	W	05LICA36	N/A	05/24/05	05/24/05

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD I05-032 H3180
LVL#: 0505L561

W.O.#: 11343-606-001-9999-00
Date Received: 05-24-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 water samples.

2. The samples were prepared and analyzed in accordance with the method checked on the attached glossary.

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met (see the sample chronology summary for analyses times for short hold samples).

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate and Sulfate were within the 75-125% control limits.

8. The replicate analyses for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate and Sulfate were within the 20% Relative Percent Difference (RPD) control limit.

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

6/14/05
Date

njp\i05-561

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

03

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
✓Bromide ✓Chloride ✓Fluoride	✓ 300.0	___ 9056	
✓Nitrate ✓Nitrite ✓Phosphate	✓ 300.0	___ 9056	
✓Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B __ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 __ 420.2	___ 9065 __ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B __ C
Salinity			___ 210A (a) __ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (__9014__9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 __ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved __Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
__Total __Dissolved __Suspended	___ 160.4		
Other:		**Method:**	

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/13/05

CLIENT: TNUHANFORD I05-032 H3180 LVL LOT #: 0505L561
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B1CR66	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	14.8	MG/L	2.5	10.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	23.6	MG/L	2.50	10.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	91.9	MG/L	2.5	10.0
-002	B1CR77	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	39.0	MG/L	2.5	10.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	64.9	MG/L	2.50	10.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	143	MG/L	25.0	100

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/13/05

CLIENT: TNUHANFORD I05-032 H3180 LVL LOT #: 0505L561
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LIC036-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	05LICA36-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/13/05

CLIENT: TNUHANFORD I05-032 H3180 LVL LOT #: 0505L561

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B1CR66	Bromide by IC	10.2	0.069	10.0	100.8	2.0
		Chloride by IC	115	14.8	100	99.7	20.0
		Fluoride by IC	9.9	0.18	10.0	97.3	2.0
		Nitrite by IC	10.2	0.25u	10.0	101.8	2.0
		Nitrate by IC	121	23.6	100	97.6	20.0
		Phosphate by IC	10.6	0.25u	10.0	106.0	2.0
		Sulfate by IC	193	91.9	100	101.0	20.0
BLANK10	05LIC036-MB1	Bromide by IC	4.9	0.25u	5.0	98.6	1.0
		Fluoride by IC	4.8	0.25u	5.0	96.9	1.0
		Nitrite by IC	4.98	0.25u	5.00	99.5	1.0
		Nitrate by IC	4.86	0.25u	5.00	97.3	1.0
		Phosphate by IC	5.3	0.25u	5.0	105.3	1.0
BLANK10	05LICA36-MB1	Chloride by IC	4.8	0.25u	5.0	95.5	1.0
		Sulfate by IC	5.0	0.25u	5.0	99.9	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/13/05

CLIENT: TNUHANFORD I05-032 H3180 LVL LOT #: 0505L561

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B1CR66	Bromide by IC	0.25u	0.25u	NC	1.0
		Chloride by IC	14.8	15.9	6.6	10.0
		Fluoride by IC	0.25u	0.25u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	23.6	23.7	0.40	10.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	91.9	92.7	0.84	10.0

Lionville Laboratory Use Only

0505261

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

See SRC

Client TNL-HANFORD SAFH 705-032

Est. Final Proj. Sampling Date

Project # 11343-CCRC-001999900

Project Contact/Phone #

Lionville Laboratory Project Manager CJS

QC Spec Del Std TAT 21 day

Date Rec'd 5-24-05 Date Due 6-14-05

Refrigerator #		
#/Type Container	Liquid	
	Solid	
Volume	Liquid	
	Solid	
Preservatives		

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only: ICBR ICCL	ICFL ICPAH	ICNO3 ICNO2	ICSOH
001	B1CR66			W	5/23/05	1020	1	✓	✓	✓
002	77			"	"	1137	1	✓	✓	✓

Special Instructions: Saf 105-032

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Ed Ee		5/24/05	0935

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		"COMPOSITE WASTE"	

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I05-032-2
		Page 1 of 1

Collector D.R. BREWINGTON	**Contact/Requester** DL STEWART	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. I05-032	**Sampling Origin** HANFORD SITE	**Purchase Order/Charge Code**
Project Title CERCLA 100 HR3 IAM (1&2), MAY 2005	SAWS-6190	**Ice Chest No.** SAWS-114 **Temp.**
Shipped To (Lab) Lionville Laboratory Incorporated	**Method of Shipment** GOVT. VEHICLE	**Bill of Lading/Air Bill No.**
Protocol CERCLA	**Priority:** 45 Days	**Offsite Property No.** 7900 3018 6914

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
A, G, I, S, and W SAFS may be grouped into one SDG to facilitate analytical batching, not to exceed SDG closure of 14 days.
Submit invoices & deliverables to DL Stewart, PNNL

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1CR66		W	5-23-05	1220	1x500-mL P	IC Anions - 300.0	Cool 4C
B1CR66		W	"	"	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D.R. BREWINGTON	D.R. Brewington		MAY 23 2005 1400	Fed Ex			
Relinquished By			Date/Time	Received By			Date/Time
Fed Ex			5/24/05 0935			5-24-05	0935
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I05-032-02

Page 1 of 1

Collector D.R. BREWINGTON	**Contact/Requester** DL STEWART	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. I05-032	**Sampling Origin** HANFORD SITE	**Purchase Order/Charge Code**
Project Title CERCLA 100 HR3 JAM (1&2), MAY 2005	SAWS-490	**Ice Chest No.** SAMS-114 **Temp.**
Shipped To (Lab) Lionville Laboratory Incorporated	**Method of Shipment** GOVT. VEHICLE	**Bill of Lading/Air Bill No.** 7900 3018 6914
Protocol CERCLA	**Priority:** 45 Days	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
A, G, I, S, and W SAFS may be grouped into one SDG to facilitate analytical batching, not to exceed SDG closure of 14 days.
Submit invoices & deliverables to DL Stewart, PNNL

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1CR77		W	5-23-05	1139	1x500-mL P	IC Anions - 300.0	Cool 4C
B1CR77		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D.R. BREWINGTON	D.R. Brewington		MAY 23 2005 1400	FedEx			MAY 23 2005
FedEx			5-24-05 0935				5-24-05 0935

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU- HANFORD **Date:** 5/24/05

Purchase Order / Project# /
SAF# / SOW# / Release #: I05-032

LvLI Batch # : 0505L561 **Sample Custodian:** V. Hesson

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEx		Airbill# 7900 3018 6914	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	Temp 5.5 °C		Cooler # SAWS-114	
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No		
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☑ Yes	☐ No		
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A	
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No		
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes	☐ No	☑ No Discrepancies	

SR-002-B